Posterior nutcracker syndrome in a child

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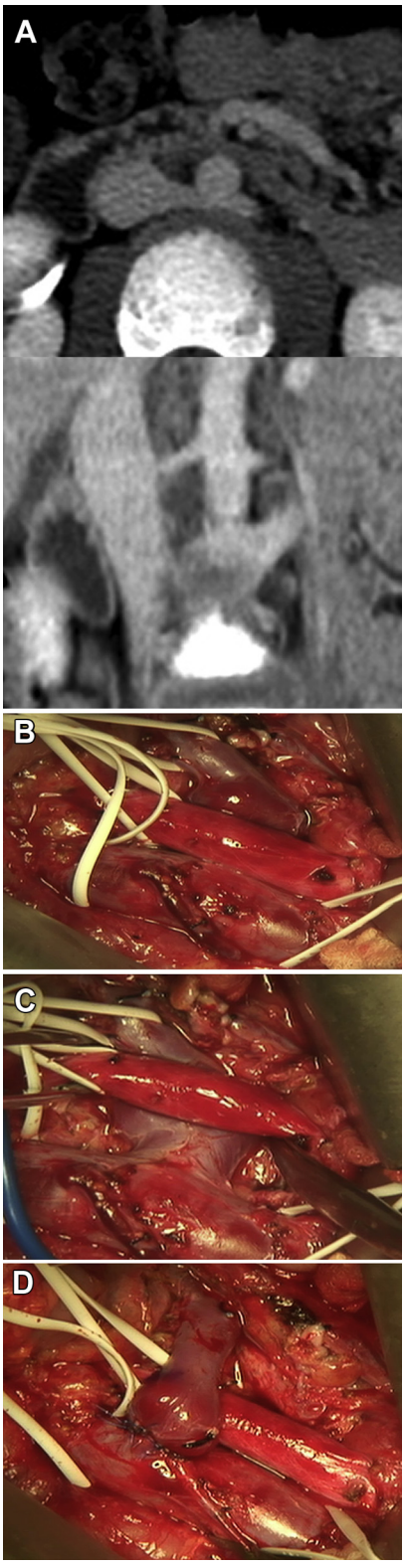
A 5-year-old boy presented with a 2-year history of intermittent hematuria, which had occurred daily for the last 6 months associated with exercise at school. An abdominal and pelvic computed tomography scan showed a retroaortic left renal vein (LRV) compressed by the aorta (*A*). A renal biopsy specimen was negative for basement membrane disease. Cystoscopy revealed pink urine from the left ureteral orifice, with microscopic hematuria documented from the right ureter. The latter questioned the diagnosis of posterior nutcracker syndrome (PNS). Owing to continued daily hematuria, intervention was recommended.

Through a midline abdominal incision, the LRV and inferior vena cava (IVC) were mobilized. The LRV was compressed by the aorta (*B*) with aneurysmal dilation (*C*). LRV and IVC pressure was 13 mm and 9 mm, respectively. The LRV was transposed anterior to the aorta with interrupted stitches to accommodate growth (*D*). The LRV aneurysm was resected and the IVC repaired primarily. Repeat pressure measurements showed no gradient. The patient was discharged 4 days after surgery (negative result on urinalysis).

Within the first 2 weeks after discharge, three episodes of gross hematuria after strenuous exercise were observed. A duplex scan showed the LRV with normal flow and no increased velocities. Urinalysis had microscopic hematuria. Subsequently, the patient has had no further episodes of gross hematuria and a negative result on urinalysis (12 months).



DISCUSSION

Nutcracker syndrome is most commonly due to compression of the LRV between the superior mesenteric artery and the aorta (anterior nutcracker syndrome). Compression is increased in the upright position in children.[1] Compression of the LRV can also occur when its course is retroaortic (PNS). When observation fails, renal vein transposition and endovascular stenting have been used for treatment. Surgical intervention for nutcracker syndrome is the preferred approach in children. Hematuria is likely due to varices in the collecting system secondary to renal venous hypertension.[2] We postulate that the early postoperative hematuria in this particular patient might have been related to a healing phase usually not observed in adults who restrict their activity during recovery. A thorough review of the literature suggests this is the youngest patient reported undergoing surgical treatment for PNS.

REFERENCES

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